

Two new species of *Hibiscus* section *Furcaria* DC. (Malvaceae) from northern Queensland

F.D. Wilson and L.A. Craven

Summary

Wilson, F.D. & Craven, L.A. (1995). Two new species of *Hibiscus* section *Furcaria* DC. (Malvaceae) from northern Queensland. *Austrobaileya* 4(3): 439–447. Two new species of *Hibiscus* section *Furcaria* DC. from northern Queensland are described, namely *H. forsteri* F.D. Wilson and *H. saponarius* Craven. A key and an exsiccatae list are included for the seven species of *H.* section *Furcaria* we recognise as occurring in Queensland and New South Wales. We provide taxonomic notes on *H. diversifolius* Jacq. and the *H. heterophyllus* Vent. complex, and draw attention to the correct type of *H. splendens* Fraser ex Graham.

Key Words: Malvaceae, *Hibiscus* -New South Wales, *Hibiscus* -Queensland, *Hibiscus divaricatus*, *Hibiscus diversifolius*, *Hibiscus forsteri*, *Hibiscus heterophyllus*, *Hibiscus meraukensis*, *Hibiscus saponarius*, *Hibiscus splendens*.

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Introduction

Hibiscus section *Furcaria* DC. (Malvaceae) is set apart from other sections in the genus *Hibiscus* L. by each calyx lobe having a prominent, thickened midrib and two thickened marginal ribs (Hochreutiner 1900). The more than 100 known species in this section are widely distributed in tropical and subtropical areas of Africa, Asia, Australia, and the Americas, and also in Oceania (Wilson 1994). All but three of the 30 or more species occurring in Australia are endemic. In this paper, we describe two new species from Cape York Peninsula and provide a key for the seven species that we recognise as occurring in Queensland and New South Wales. We also provide taxonomic notes for *H. diversifolius* Jacq., a widespread and variable species, and for the *H. heterophyllus* Vent. complex, for which reconsideration of morphological diversity has resulted in the reduction of *H. heterophyllus* subsp. *luteus* (Hochr.) F.D. Wilson to *H. divaricatus* Graham. Attention is drawn to the correct type of *H. splendens* Fraser ex Graham.

Taxonomy

***Hibiscus forsteri* F.D. Wilson, sp. nov.** Frutex 1–3 m altus; ramulis stellato-pubescentibus, aculeis vel aculeis carentibus et pilis glandulosis; foliis in circumscriptione generali ellipticis, anguste ovatis, ovatis, vel orbicularibus, stellato-pubescentibus, nectariis foliaribus; floribus epedunculatis; segmentis epicalycis stellato-pubescentibus et setis grossis, linearibus, late complanatis versus apicem, projecturis minutis in marginibus duabus vel nullis; calyce stellato-pubescentibus et setis grossis, enectariis; petalis albis vel subroseis, basi atrorubris; capsula pilis appressis stramineis densis; seminibus striatis et minute pectinato-pubescentibus. **Typus:** Queensland. COOK DISTRICT: 6.8 km from Bromley on the track to Carron Valley, 16 July 1990, *Eucalyptus tetradonta* F. Muell.-*E. nesophila* Blakely woodland on grey, sandy soil, J.R. Clarkson 8866 & V.J. Neldner (holo: CANB; iso: BRI; DNA, K, L, MBA, NY, n.v.).

Shrub 1–3 m tall. Branchlets with fine stellate hairs in a longitudinal band between the nodes and less dense or absent on the remainder of the internode, or sometimes the branchlets with a fine dense stellate-pubescent; with coarse stellate hairs sparse and sometimes inserted upon tubercles; with aculei 1–1.3 mm long or aculei absent; with glandular hairs; the aculei and glandular hairs more or less evenly distributed. Stipules at length deciduous, unlobed, linear to subulate (rarely the distal third to half slightly flattened as in the epicalyx segments), with stellate and glandular hairs, 0.6–1.3 cm long. Climax leaves with the petiole with indumentum similar to that of the branchlet or sometimes dissimilar (aculei always absent, stellate hairs usually more dense than on the branchlets and sometimes the fine stellate hairs present only as a longitudinal adaxial band), 3.5–12.5 cm long; lamina usually weakly discoloured, in general outline elliptic, ovate, narrowly ovate, broadly ovate or orbicular, unlobed to shallowly 3-lobed, 9.0–22.0 cm long, 5.0–18.0 cm wide, the base cuneate to truncate, the margin serrate to serrulate (to subcrenulate, with minute teeth in the sinuses), the lobes as long as wide to shorter than wide, the apex acute to rounded (to rarely retuse), the indumentum similar on both surfaces or more dense on the abaxial surface, with dense stellate and glandular hairs on each surface or abaxially with fine stellate hairs absent or more or less evenly distributed across the surface and coarse stellate hairs, when present, restricted to the veins (the coarse hairs scattered to moderately dense on the major veins, becoming progressively smaller, less coarse and less dense on the finer veins); foliar nectary present at base of the lamina, 3–9 mm long. Distal leaves reduced in shape and size or only in size, narrowly elliptic, elliptic, or ovate. Flowers solitary in leaf axils and in short sympodia, not pedunculate. Pedicel with sparse to very dense fine stellate hairs, sometimes with sparse aculei, or with scattered to moderately dense coarser stellate hairs inserted upon small tubercles, sometimes the pedicel with both fine and coarse stellate hairs and aculei, 13–21 mm long. Epicalyx with sparse to dense fine stellate hairs, sometimes with moderately to very dense coarser stellate hairs inserted upon tubercles (these mostly on the segment margins), 15–28 mm long, 10–12-

segmented, the segments free, 0.65–0.95 times the length of the calyx, incurved, linear, 3-nerved, rounded or flattened in cross-section proximally, variously flattened and widened distally (apparently two types, the first with a rounded or flattened proximal part, 4–12 mm long, and a flattened, widened distal part, 7–12 mm long, 1–2 mm wide; the second also with a rounded or flattened proximal part, 11–13 mm long, and a flattened, widened distal part, 7–8 mm long, 2 mm wide, but with a minute projection on each of the two margins at the base of the distal part). Calyx with whitish to yellowish, very sparse to dense fine stellate hairs, sometimes with moderately dense to dense aculei on ribs, or scattered to moderately dense coarser tubercle-based stellate hairs (these mostly on the ribs), 21–32 mm long; calyx nectary absent. Petals white with a pink flush on one margin, and with the proximal region reddish, 6.5–8.5 cm long. Staminal column 16–30 mm long, the stamens distributed throughout the length of the column, the filaments 1–2 mm long. Style exerted 10–16 mm beyond apex of staminal column, the branches 4–7 mm long. Stigmas capitate, the hairs 0.2 mm long. Capsule densely appressed-pubescent, ovoid and beaked, 19–30 mm long, the beak glabrous, conspicuous or inconspicuous, 1–3 mm long. Seed striate and minutely pectinate-pubescent, angular-reniform, c. 4 mm long. **Fig. 1.**

Other Specimens Examined: Queensland. COOK DISTRICT: Near Glennie Mt, Bolt Head Road, off Maloneys Springs Road, Jun 1989, *Forster* 5518 (ASU, BRI); Maloneys Springs, Bromley Station, Jul 1991, *Forster* 8792 (BRI, CANB); Maloneys Springs, 40 km E by road of Moreton Telegraph Station, Jun 1989, *Forster* 5234 (ASU, BRI, CANB, MEL; DNA, QRS, n.v.); 92 km N of the Lockhart River road on the track to Wattle Hill, Aug 1991, *Clarkson* 9078 & *Neldner* (BRI, CANB; MBA, QRS, n.v.); Garraway Hill, southern slopes, Jul 1991, *Forster* 9040 (BRI, CANB); Brown Creek on Iron Range Road (174 km N of Coen by road), Sep 1975, *Coveny & Hind* 7100 (ASU, BRI, NSW); Brown Creek Crossing on the road to Iron Range, Aug 1987, *Clarkson* 7341 (CANB; BRI, L, MBA, QRS, n.v.); Claudie River, Jun 1972, *Irvine* 213 (QRS); 48 km S of Portland Roads, Jul 1968, *Pedley* 2750 (BRI); Brown Creek, Pascoe River, Jun 1948, *Brass* 19181 (BRI, CANB; A, n.v.); Iron Range Road, 6 km before Garraway Creek Crossing, Apr 1988, *Forster* 4249 (ASU, BRI); Cape York Peninsula, 1930, *Thompson* 26 (BRI); Old Lockhart-Nundah Road, Oct 1973, *Hyland* 6947 (QRS); Between Hopevale Mission and Elderslie Station, May 1969, *Bates* 259 (BRI); 53 km from Cooktown on Old McIvor Road, 6 km from Hope Vale Turnoff, May 1970, *Blake* 23449 (BRI, CANB);



Fig.1. *Hibiscus forsteri*. A, Forster 4249 (ASU) (flower: Coveny & Hind 7100 (ASU)). B, fruiting calyx of Forster 5518 (ASU). C, fruiting calyx of Pedley 2750 (BRI).

27 km NW of Cooktown along McIvor River road, Jun 1972, *Wrigley & Telford* NQ1386 (CBG). NORTH KENNEDY DISTRICT: Foot of Mt Elliot, Oct 1950, *Blake* 18710 (BRI, CANB; K, MO, NT, *n.v.*); Burdekin Delta Area, Jun 1950, *Kleinschmidt* 78 (CANB); Ollera Creek Holding near N.P.R. 477, Mt Spec, Feb 1972, *Hyland* 5916 (QRS). Australian Capital Territory. cultivated in Canberra Botanic Garden (*ex Wrigley & Telford* NQ1386), *Cummings* 100 (CBG).

Distribution and habitat: *Hibiscus forsteri* occurs in far north Queensland in the Pascoe-Lockhart Rivers area west of Iron Range, at McIvor River near Cooktown, and near Townsville. **Map 1.**

It has been recorded as occurring in *Eucalyptus tetradonta* F. Muell.-*E. nesophila* Blakely woodland, open eucalypt forest on sandy soil, *E. hylandii* Carr & Carr-*Welchiodendron* Peter G. Wilson & Waterhouse shrubby woodland, scrubby eucalypt forest on granite sand with large boulders, and a rainforest road clearing.

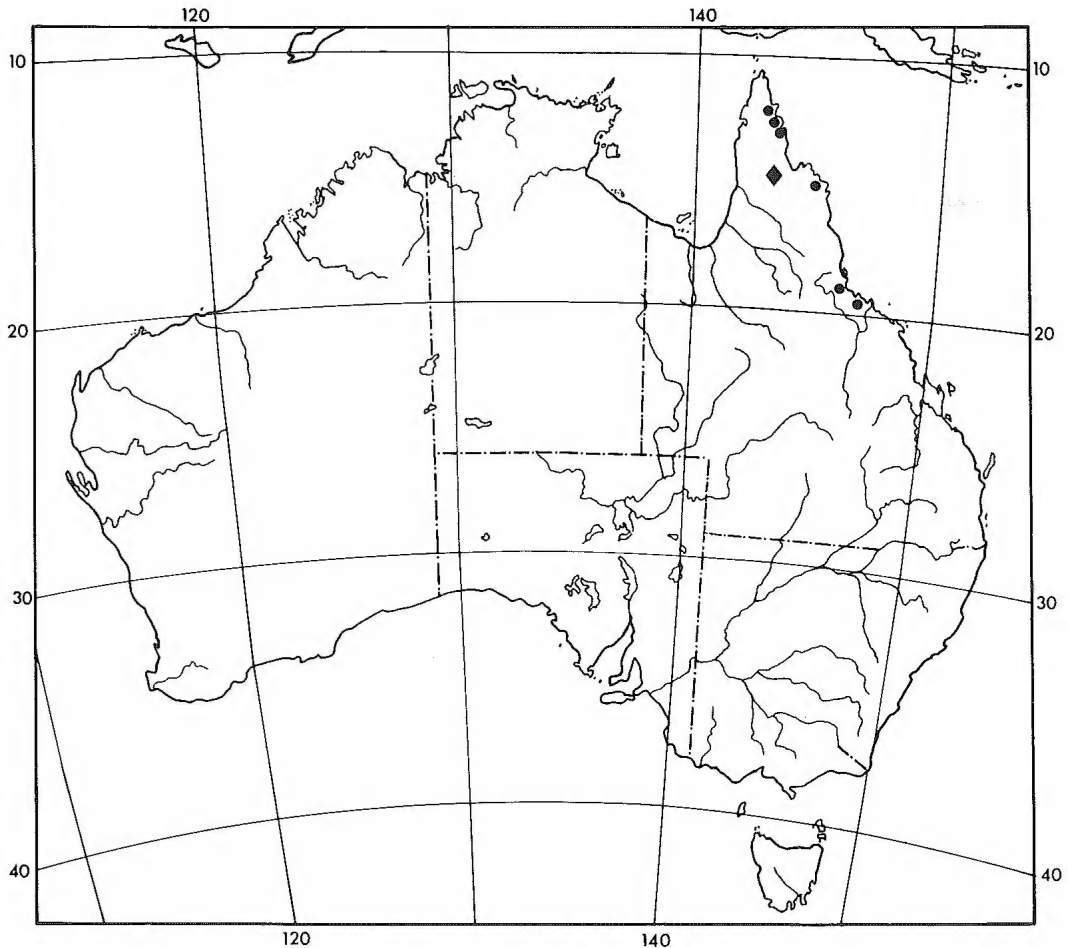
Etymology: Named in honor of Paul Forster of the Queensland Herbarium who has collected extensively in northern Queensland and has shared with us his knowledge of this interesting plant.

Notes: Wilson (1994) incorrectly interpreted the projections on the distal part of the epicalyx segments of some collections of *H. forsteri* as a bifurcation, a feature common in African and American species of *Hibiscus* section *Furcaria*. Apparently, Wilson's previous (Wilson 1974) statement that the Australian species of this section lack bifurcate epicalyx segments is correct. Plants of *H. forsteri* from three separate localities possess the projections on the epicalyx segments: *Irvine* 213, *Pedley* 2750, and the CANB sheet of *Blake* 23449 (*Blake* 23449 at BRI has flattened, slightly widened segments but lacks projections). Paul Forster (*pers. comm.*, 1994) noted that Maloneys Springs plants (e.g. *Forster* 5234) are prickly and deciduous, and occur on sandstone, whereas the Iron Range plants (e.g. *Forster* 4249) are hispid and evergreen, and occur on granite. It is obvious from the morphological description given above and Forster's field observations that *H. forsteri* is quite variable, but there seems to be no consistent morphological and distributional

pattern that would allow us to separate the various populations as distinct entities.

Hibiscus saponarius Craven, *sp. nov.* Suffrutex fusus; ramulis vitta pilorum stellularum tenuium mollium in quoque internodio, setis tenuibus longis densis pluriarmatis ubique et pilis glandulosis ubique; foliis in circumscriptione generali orbicularibus usque depressi-ovatis, 3–5-lobatis infirme usque valde, setis tenuibus brevibus densis; nectariis foliaribus plerumque carentibus; floribus pedunculatis; pedunculo, pedicello, epicalyce et calyce setis tenuibus longis densis; segmentis epicalycis linearibus, complanatis, apici integris; enectariis calycinis; petalis albis vel subroseis, basi atrorubris; capsula pilis appressis sparsissimis; seminibus striatis et pilis brevis albis crassis. **Typus:** Queensland. COOK DISTRICT: 4.2 km E of King River on the Edward River to Musgrave road, 3 June 1989, *Eucalyptus tetradonta* F. Muell.-*E. hylandii* Carr & Carr woodland on white sand with a grassy ground layer, *J.R. Clarkson* 8107 & *V.J. Neldner* (holo: CANB; iso: BRI; K, MBA, *n.v.*).

Sprawling subshrub. Branchlets with fine, soft stellate hairs to 1 mm long present in a longitudinal band on each internode, throughout with very dense, straight, soft, whitish, 1-several-armed fine hairs to 3 mm long, and throughout with minute glandular hairs. Stipules more or less persistent, subulate, unlobed or 2-lobed, with fine hairs as those on the branchlets and with minute glandular hairs, 4–7 mm long (up to 12 mm long in cultivated plants). Climax leaves with the petiole with indumentum similar to that of the branchlet, 4.0–7.0 cm long (up to 16.5 cm long in cultivated plants); lamina very weakly discoloured, in general outline orbicular to depressed ovate, shallowly to deeply 3–5-lobed (more commonly 5-lobed on mid-stem leaves (mid-stem leaves are sometimes shallowly to moderately lobed in cultivated plants)), 4.5–8.5 cm long (up to 12.0 cm long in cultivated plants), 8.0–11.0 cm wide (up to 18.0 cm wide in cultivated plants), the base cordate to cuneate, the margin serrate to serrate-sinuate, the lobes usually longer than wide, the apex acute to obtuse, the indumentum generally similar on each surface, on the abaxial surface usually with



Map 1. Distributions of *Hibiscus* species. ●, *H. forsteri*; ◆, *H. saponarius*.

moderately dense to very dense fine hairs similar to, but shorter than, those on the branchlets and with minute glandular hairs, the midrib and primary vein indumentum similar to that of the interveinal regions or sometimes more dense on the major veins; foliar nectary usually absent (observed only in very early mid-stem leaves of cultivated plants where situated at base of the lamina and 0.8–1 mm long). Distal leaves reduced in shape and size, linear or 3-lobed (the lobes then being linear to oblong). Flowers solitary in leaf axils, pedunculate. Peduncle, pedicel, epicalyx, and calyx with moderately dense (very dense on pedicel), straight, soft, 1- to 4-fid fine hairs to 3 mm long. Peduncle 10–38 mm long. Pedicel

13–27 mm long. Epicalyx 9–12 mm long, 9–11-segmented, the segments free at the base, 0.6–0.75 times the length of the calyx, straight or slightly recurved, linear, flattened, 3-nerved, entire at the apex. Calyx with hairs on the ribs, otherwise glabrous, 14–20 mm long (*Clarkson* 7181 & *Simon* has markedly acuminate calyx lobes to 20 mm long — other specimens have shorter, slightly acuminate lobes); calyx nectary absent. Petals white, with a suffusion of pink mainly on the veins on the abaxial side, and with the proximal region reddish, 5.5–6.5 cm long. Staminal column 12 mm long, the stamens distributed along distal 10 mm of the column, the filaments 1.5–2 mm long. Style exerted 5 mm beyond apex of staminal column, the

branches 1.5–2 mm long. Stigmas capitate, the hairs 0.5 mm long. Capsule very sparsely hairy, with a few appressed hairs throughout, ovoid and beaked, 8–11 mm long, the beak glabrous, conspicuous, 1 mm long. Seed striate and with very short, white, thick hairs, angular-reniform, c. 3.5 mm long. **Fig. 2.**

Other Specimens Examined: Queensland. Cook District: 9 km W of the Glen Garland turnoff on the Musgrave to Edward River road, May 1987, *Clarkson 7181 & Simon* (BRI, CANB, DNA, MBA, PERTH, QRS). Australian Capital Territory. Cultivated in glasshouse at Canberra, ACT (*ex Clarkson 8107 & Neldner, Craven 8817* (CANB), 8820 (ASU, CANB), 8824 (CANB).

Distribution and habitat: *Hibiscus saponarius* is known only from the two cited populations along the road from Musgrave to Edward River on Cape York Peninsula, Queensland. (**Map 1**).

It has been recorded as occurring in *Eucalyptus tetradonta* F. Muell.-*E. hylandii* Carr & Carr woodland with a grassy ground layer (which once was noted as being sparse *Schizachyrium* Nees) on sandy soil (once noted as having surficial laterite pebbles).

Etymology: From Latin *sapo* (soap), for the distinctive slippery or soapy feeling of the branchlets of living plants of this species, apparently caused by an exudate from the glandular hairs.

Notes: *Hibiscus saponarius* seems to be most closely related to *H. meraukensis* Hochr. Both species have acuminate calyx lobes that are glabrous except on the ribs. The capsules of *H. saponarius* are sparsely pubescent, those of *H. meraukensis* are glabrous to sparsely pubescent, in contrast to all other Australian species which have densely pubescent capsules. The branchlets of *H. meraukensis* are usually glabrous or have recurved aculei but two collections examined (*Clarkson 6471, 6934 & Neldner* (BRI, CANB)) have hairs similar to those on *H. saponarius* except that they are shorter and not quite as dense. *Clarkson 6934 & Neldner* appears to be from a small, trailing plant and has a glabrous capsule; *Clarkson 6471 & Neldner* was described as a trailing shrub and has a sparsely pubescent capsule. All other collections of *H. meraukensis* seen from Queensland represent the typical, non-stellate-pubescent, aculeate form of the species.

Key to Species of Hibiscus sect. Furcaria in Queensland and New South Wales

- 1. Nectary present on calyx midrib 2. **H. diversifolius**
Nectary absent 2
- 2. Capsule glabrous or at the summit sparsely pubescent; pedicel glabrous or aculeate 5. **H. meraukensis**
Capsule sparsely or densely pubescent throughout; pedicel stellate-pubescent and with or without aculei 3
- 3. Flowers pedicellate and pedunculate 4
Flowers pedicellate, peduncle absent 5
- 4. Branchlets with very dense, velvety, simple to stellate fine hairs and simple to branched aculei to 2 mm long; capsule densely pubescent 7. **H. splendens**
Branchlets with 1–4-fid soft and flexible hairs to 3 mm long; capsule sparsely pubescent 6. **H. saponarius**
- 5. Epicalyx segments flattened and slightly to markedly widened towards the apex 3. **H. forsteri**
Epicalyx segments not flattened or widened towards the apex 6
- 6. Calyx densely stellate-pubescent and without aculei, the indumentum distinctly coloured (straw- to rust-coloured when dry) 4. **H. heterophyllus**
Calyx sparsely stellate-pubescent and/or aculeate, the indumentum not distinctly coloured 1. **H. divaricatus**

***Hibiscus diversifolius* Jacq:** A purple-flowered form of *H. diversifolius* occurs at Lake Euramoo on the Atherton Tableland in north Queensland (Brass 33650 (BRI), Kershaw & James ANU 10025 (CANB), Scarth-Johnson s.n. (BRI)). Exell (1961) noted that the only form of *H. diversifolius* that occurs in the Flora Zambesiaca area is purple-flowered and uniformly pubescent and is referable to *H. diversifolius* subsp. *rivularis* (Bremek. & Oberm.) Exell. The yellow-flowered *H. diversifolius sens. strict.*, that occurs both north and south of the Flora Zambesiaca area, is distinguished not only by its flower colour, but also by the longitudinal line or lines of pubescence on its stems. This distinction, however, does not hold in Australia because uniformly pubescent stems occur on yellow-flowered collections (e.g., McDonald 459 (CANB)), and a purple-flowered form has lines of pubescence as well as being otherwise pubescent (e.g., Kershaw & James ANU 10025). Therefore, we regard the purple-flowered form of *H. diversifolius* in Australia as merely a colour variant. Such variants are common among species of *Hibiscus* section *Furcaria* (Wilson 1994).

The *Hibiscus heterophyllus* complex: Wilson (1974) recognized three taxa in the *H. heterophyllus* complex in east-central and south-eastern Queensland: *H. heterophyllus* Vent. subsp. *heterophyllus*, occurring from latitude 17 to latitude 34 degrees South and distinguished by the very dense stellate indumentum on the calyx; *H. heterophyllus* subsp. *luteus* (Hochr.) F.D. Wilson, occurring from latitude 23 to latitude 26 degrees South and distinguished by a sparse stellate pubescence on the calyx; *H. divaricatus* Grah., occurring in a limited area from latitude 25 to latitude 26 degrees South and longitude 151 to longitude 152 degrees East, and distinguished by having bristles and/or aculei on the calyx ribs. A study of more recently collected specimens of this complex shows that the latter two taxa intergrade and cannot be distinguished morphologically with any degree of certainty. Therefore, in the key above, only two taxa in the complex are

included, namely *H. heterophyllus sens. strict.* and *H. divaricatus*, the latter including *H. heterophyllus* subsp. *luteus*. If one accepts that species must be reproductively isolated from others, some doubt remains about this conclusion as Menzel & Martin (1974) produced vigorous, fertile hybrids between *H. heterophyllus sens. strict.* and the form that Wilson (1974) called *H. heterophyllus* subsp. *luteus*, and also between *H. heterophyllus sens. strict.* and *H. splendens*. *Hibiscus heterophyllus* x *H. splendens* hybrids are available in the nursery trade (Menzel & Martin 1974; Colleen Keena, Brisbane, Queensland, pers. comm., 1994). Apparently, natural crosses between these species also occur in Queensland (Bates 340, 341 (BRI) from Wide Bay District, which were interpreted by the collector as representing interspecific hybrids because the plants concerned were intermediate morphologically between the two putative parental species, *H. heterophyllus* and *H. splendens*, that occurred in close proximity). Paul Forster (BRI) drew our attention to a number of collections at BRI representing plants from Port Curtis District, Queensland, growing on serpentinite and displaying flower colours ranging from white with a pink flush to apricot, pale pink, pink, orchid pink, and rose pink. All fall within the morphological limits of *H. heterophyllus* as accepted in this paper. It is obvious that more than a morphological study will be required to resolve the relationships among these taxa.

To the synonymy of *H. heterophyllus* Vent. *sens. strict.* may be added the following: *H. amaliae* Domin, *Biblioth. Bot.* 89: 404 (1928) (MEL, iso.). The examined isotype clearly falls within the variability of *H. heterophyllus* as we are defining this species.

***Hibiscus splendens* Fraser ex Graham:** Wilson's (1974) designation of the specimen Fraser s.n., 1825, Hastings River, New South Wales, at Edinburgh (E) as neotype of *H. splendens* was unnecessary because the holotype exists at Kew (K) (Lauener & Paul 1985). The specimen Wilson designated neotype is, in fact, an isotype of *H. splendens*.



Fig. 2. *Hibiscus saponarius* Craven 8820 (ASU).

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Plants; to these organisations we extend our thanks. The directors and curators of the following herbaria are thanked for the opportunity to study collections in their care: ASU, BRI, CANB, CBG, MBA, MEL, QRS. John Clarkson, especially, is thanked for his interest in collecting the mallows of northern Queensland. Marsha Minnis prepared the illustrations.

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Index to Numbered Exsiccatae of *Hibiscus* section *Furcaria* from Queensland and New South Wales

The number following the colon is the number of the species given in the key above.

- Adams 3649: 2. Anderson 2029: 4. Andrews & Simon 25: 1.
- Bates 259: 3; 323: 1; 338: 7. Batianoff 3200, 3625A, GG9105028, MS9105110: 4. Batianoff & Dalliston 3107: 4. Batianoff & McDonald 681, 799: 1. Bean 3167, 3184, 3185: 4; 6753: 7. Bell 282: 4. Bennett 1: 4; 2: 3. Blake 12729 *p.p.*: (BRI) 1, (CANB) 4; 18710: 3; 19966: 1; 23449: 3. Brake R3: 4. Brass 18501, 18755, 18977: 5; 19181: 3; 33650: 2. Brooker 4112: 5. Burbidge 5394: 1. Burkitt 45: 3. Byrnes & Clarkson 3745: 4.
- Clarkson 5738, 5950, 6069, 6438, 6480, 6615, 6934: 5; 7341: 3. Clarkson & Henderson 7923: 5. Clarkson & Neldner 6471, 8780, 10111: 5; 8107: 6; 8866, 9078: 3. Clarkson & Simon 7019: 5; 7181: 6. Coveny & Haegi 9866: 7. Coveny & Hind 6907: 4; 7100: 3. Craven 3152: 4; 3167: 1; 3240: 5; 8610: 7; 8817, 8820, 8824: 6. Craven, Grace & Lawrence 8831: 1. Craven, Wilson & Smith 9355, 9356, 9357: 4. Crome 718: 5. Cummings 100: 3.
- Dillewaard 127: 1. Dockrill 1076, 1104: 4. Dunn, Coveny & Donabauer 110: 2. Dunn & McMahon 146: 4. Durrington 136: 1.
- Everist 5419: 5; 8000: 4.
- Fagg 717: 4. Fensham 287, 1050, 1051: 4; 682, 1052, 1053: 1. Forbes 2779: 4; 2780: 7. Forster 4024, 6370: 5; 4249, 5234, 5518, 8792, 9040: 3; 6688, 7923, 14140: 1; 7637, 9409, 9891: 4. Forster & McDonald 8022, 8179, 8238: 4. Forster & Smyrell 9187: 2. Forster, Tucker & Kenning 9982: 4. Forster, Tucker & Orford 5866: 4.
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